

Mora Nasals and Their Following Syllables

著者	KUWAMOTO Yuji
journal or publication title	TOHOKU UNIVERSITY LINGUISTICS JOURNAL
number	13
page range	13-21
year	2004-05-13
URL	http://hdl.handle.net/10097/00129673

Mora Nasals and Their Following Syllables*

KUWAMOTO Yuji

Keywords: mora nasals, onsetless syllables, stability of syllable, deletion, resyllabification

1. Introduction

Mora nasals, which consist of codas, play a little different role from other moraic elements in coda position, that is, the second part of long vowels or diphthongs, or the first part of geminates. Previous studies such as Kuwamoto (2002), Mori (2002), and Tanaka (2002) point out that mora nasals are more stable than any other moraic element in coda position. For example, they are less liable to delete in formations of abbreviation in Japanese (Mori 2002, Kuwamoto 2002), or they are more preferable in accentless word finals (Tanaka 2002). Again Kuwamoto (2002) shows that mora nasals can be inserted in place of long vowels to become more stable.

In spite of these studies, mora nasals followed by onsetless syllables are rather unstable. In such environments mora nasals can be deleted or easily be subject to resyllabification as the following onset. This is partly because mora nasals themselves are unstable, and partly because the following onsetless syllables seem to be so. The term "unstable, or instability" in this paper is based on whether a deletion or an insertion takes place or not. Note that the data in the previous studies are all in Japanese. In this paper I will deal with data from Arabic, as well as Japanese.

This paper is organized as follows. First, some preceding studies are given in section 2. Section 3 shows the data of deletion of mora nasals in Japanese. Arabic data are treated in section 4 for resyllabifications and deletions in certain cases. Section 5 offers more Japanese data on formation of some types of borrowings. The section 6 is the conclusion of this paper.

2. Preceding studies

Recent studies on abbreviated compounds and some other word formations suggest that mora nasals are less liable to delete than any other moraic element which is the latter one in a heavy syllable, such as the second element of a long vowel or a diphthong and an ambisyllabic consonant other than a nasal. Mori (2002) shows that, in the formation of abbreviated compounds in Japanese, heavy syllables, which consist of the second and the third morae of the original word, can be divided in order to support the unmarked bimoraic foot form. Mori (2002) points out that heavy syllables containing mora nasals tend to avoid such a division most.⁽¹⁾ Tanaka (2002) also shows the stability of heavy syllables containing mora nasals. He analyzes the accentuation of word final heavy syllables, especially which contain long vowels and mora nasals. Tanaka points out that the accentlessness of word final heavy syllables is parallel to the stability of those syllables: how word endings are not deleted (Tanaka 2002: 54).

Kuwamoto (2002) also points out the stability of the syllables containing mora nasals. Firstly, in some kind of abbreviations in Japanese, long vowels are avoided, and instead, mora nasals are inserted regardless of their circumstances as shown in (1).

(1) haN.(buN) + chaa.(haN) + raa.meN => haN.chaN.raa.meN
 (half-sized fried rice ramen a set of ramen and half-sized fried rice)

te.tsu.(ya) + maa.(jaN) => te.tsu.maN
 (all night mah-jongg playing mah-jongg all night long)

Secondly, two kinds of variants are derived from the original word containing a mora nasal. As shown in (2), one is the deletion of a full syllable containing a mora nasal (se.su.ta), and the other is the full appearance of it even if the first syllable or another syllable were deleted disorderly (buN.ta).

(2) se.buN.su.taa => se.(buN).su.ta(a) / (se).buN.(su).ta(a)
 ("Seven Stars" (a name of cigarettes))

Thirdly, long vowels can alter into mora nasals in some colloquial or dialectal speech⁽²⁾, as in (3):

(3) shoO.beN => shoN.beN "pee"
 too.ga.ra.shi => toN.ga.ra.shi "red pepper"

The three types of word formation exemplified above indicate the higher stability of mora nasals than other elements contained by heavy syllables, such as the second halves of long vowels or other moraic elements.

To summarize briefly these preceding studies, CVN syllables have much higher stability than any other heavy syllable. But this suggestion is based mainly on the structure of a single syllable alone. Mori's (2002) discussion concerns whether a heavy syllable itself is divided into two parts or not. Tanaka's (2002) analysis is about the situation of word endings. Kuwamoto (2002) also treats mainly such heavy syllables themselves. But the studies do not take the adjacent syllable structure or some related information into consideration. In this paper I analyze heavy syllables with mora nasals, considering the information of the following syllable structure. The following sections will illustrate the deletion of mora nasals or resyllabification as the onset of the following syllable in which onsetless syllables particularly play an interesting part.

3. Deletion of mora nasals in Japanese

In this section I provide some examples of mora nasal deletion in Japanese. In some environments where a mora nasal is followed by an onsetless syllable, the mora nasal is deleted as shown in (5). This type of phenomenon often occurs in colloquial or dialectal and rather rapid

speech.

(4) ...N.V... => ...(N).V...

(5)	geN.iN	=>	gee.iN	"cause"
	teN.iN	=>	tee.iN	"clerk"
	zeN.iN	=>	zee.iN	"all members"
	maN.iN	=>	maa.iN	"full of people"

All the output forms in (5) make ill-formed "three-mora sequences," though not in a single syllable (cf. Kubozono's (1995) "trimoraic syllable ban"). Note that all the following syllable forms in the outputs of (5) are only [iN]. In the case of any vowel other than /i/, such phenomena don't happen, as in (6):

(6)	keN.eN	=>	*kee.eN	"dislike of smoking"
	hoN.aN	=>	*hoo.aN	"adaptation of writings"
	haN.oN	=>	*haa.oN	"chromatic semitone"
	aN.uN	=>	*aa.uN	"dark cloud"

Again, if the following syllable is an open syllable, that is, one which doesn't end in a mora nasal, the mora nasal isn't deleted at all.

(7)	reN.ai	=>	*ree.ai	"love"
	shiN.ai	=>	*shii.ai	"dearness"
	zeN.a.ku	=>	*zee.a.ku	"right and wrong"
	fuN.i.ki	=>	*fuu.i.ki	"atmosphere"

The data in (6) and (7) show the stability of mora nasals as is shown in Kuwamoto (2002), and at the same time, avoid the three mora sequence. So they can be quite optimal forms. On the contrary, the data in (5) don't go well with Kuwamoto (2002) (and also with Mori (2002) and Tanaka (2002)). Oddly enough, the phenomenon cited in (5) takes place only in this environment; ...N.iN..., so this type of deletion might be just an ad hoc phenomenon. Although I don't know why it doesn't take place in other environment, such nasals as in (5) can alter to nasalized vowels, as in (8). These alternations also occur in other environments, as shown in (9). The both examples of (8) and (9) show weakening of intervocalic nasals, and the nasal deletion in (5) possibly results from this type of weakening.

(8)	saN.iN	=>	saã.iN	"San-in district"
	oN.iN	=>	oõ.iN	"phone"
	eN.iN	=>	eẽ.iN	"remote cause"

- (9) seN.eN => seẽ.eN "one thousand yen"
 boN.o.do.ri => boõ.o.do.ri "Bon Festival dance"

Now we focus our attention on the following syllables instead of mora nasals themselves. The following syllables in (5) are all onsetless syllables. If so, it is possible to say that those onsetless syllables are rather unstable ones, and this could provoke such a kind of mora nasal deletion. Itô (1989) and many others state the generality of Onset Principle (Itô 1989: 223). Although the output syllables in (5) remain onsetless after all, this phenomenon shows, at least, that this kind of syllable is unstable.

4. Cases in Arabic

In Arabic phonology, onsets in syllables are obligatory, so no onsetless syllable exists. While there are many consonant-final morphemes in the language, there are many underlying consonant initial morphemes. When the former is followed by the latter in this order, a vowel insertion can occur. In such cases an underlying form is resyllabified, and when it comes to mora nasals, they alter to the following onset by resyllabification, or in another case they are deleted. In this section, we provide two kinds of phenomena: the vowel insertion after a preposition with a mora nasal ending is discussed in 4.1., and the suffixation of a morphemic mora nasal is dealt with in 4.2.

4.1. Vowel insertion after prepositions

Two Arabic preposition "min-" and "ʕan-", both of which end in a mora nasal underlyingly, are followed by the definite article "ʾal-" plus some genitive noun with a insertion of a vowel between them (transcriptions: ʕ=ʕ/, ʾ=ʔ/). And the mora nasal in the preposition alters to an onset in the following syllable. The derivation is shown in (10).

- (10) a. miN - 'al - madiinati => mi.n<a>l.ma.dii.na.ti "from the town"
 from - the - town
- b. 9aN - 'al - funduqi => 9a.n<i>l.fuN.du.qi "apart from the hotel"
 off - the - hotel

These examples make it difficult to understand the vowel insertion clearly. The derivation shown in (10a) is not the deletion of " ' ", although it appears to be. The fact is that the underlying form of the definite article "ʾal-" is "l-", and in accordance with the preceding environment, this "l-" is preceded by a vowel /a/ to make a nucleus of a renewing syllable, and then, /ʔ/ is inserted which is the default segment in Arabic (for a detail explanation of this topic, see Kuwamoto 1997: 88ff.). So the example in (10) can be rewritten as in (11) to make it clear.

- (11) a. miN - l - madiinati => mi.n<a>l.ma.dii.na.ti "from the town"

b. 9aN - l - funduqi => 9a.n<i>l.fuN.du.qi "apart from the hotel"

As mentioned above, when the article " l-" is in a phrase-initial position, a prothesis of vowel /a/ ensues, and then, /ʔ/ is compensated as the onset of the syllable as in (12). On the other hand, when this article follows an open (and light) syllable, no insertion can occur, as shown in (13).

(12) l - madiinatu => <'a>l.ma.dii.na.tu
the - town (nominative)

(13) wa l - madiinatu => wal.ma.dii.na.tu "and the town"
and the - town

In (10b), the inserted vowel is /i/ which is different from /a/ in " 'al-". So this phenomenon, as a whole, is not the deletion of " ' " in " 'al-", but the insertion of a vowel^{(3),(4)}. And through the process, mora nasals become onsets of the following syllables. This is one of the evidences which show that mora nasals are unstable when followed by onsetless syllables.

4.2. Suffixation of a morphemic mora nasal

There is another kind of phenomenon which can be regarded as mora nasals in Arabic. In Arabic morphology, the indefiniteness of nouns is shown by the particular endings -un/-in/-an, which show nominative, genitive, and accusative cases respectively. And when the nouns are modified by adding the definite article " 'al-", or another genitive noun or pronoun, word ending /n/ is deleted, as in (14) shows.

(14)	bai.tun	'al.-bai.tu(n)	bai.tu(n). - haa
	"a house"	"the house"	"her house"

Apparently, these examples indicate that word final /n/ is the indefinite marker. But in the case of dual nouns (and the regular type of plurals) things are a little different. The dual endings in Arabic are -aani/-aini (nominative/genitive and accusative respectively). The final part /ni/ is deleted when followed by another genitive nouns (saiyaarataa(n) muhammadin). But in case of adding the definite article, -ni is not deleted as in " 'as.-sai.yaa.ra.taa.ni" in (15). In the regular type of plurals, things are just the same. The final part /na/ in -uuna/-iina is deleted as in (16).

(15)	sai.yaa.ra.taa.ni	'as. - sai.yaa.ra.taa.ni	sai.yaa.ra.taa. (ni) mu.ham.ma.din
	"two cars"	"the two cars"	"Muhammad's two cars"

(16)	mu.9al.li.muu.na	'al. - mu.9al.li.muu.na	mu.9al.li.muu(na) l. - mad.ra.sa.ti
	"teachers"	"the teachers"	"the teachers of the school"

In these cases, the word final /ni/ or /na/ is not considered as marking the indefiniteness of nouns,

which is different from the case in (14). Through (14) to (16), all the examples of deletion of /n/ or a syllable with /n/ (except for " 'al-baitu(n)'") are followed by some syllables in the phrases in question. From the observation, we might conclude that nasals are unstable in such an environment in Arabic phonology, but when an adjective follows a nasal or a syllable with a nasal, that is, when that adjective modifies the preceding noun, this kind of deletion doesn't take place, as in (17). Therefore, this case is very problematic for the deletion of nasal elements in Arabic phonology.

- (17) 'as. - sai.yaa.ra.taa.ni l. - ham.raa.waa.ni "the two red cars"
 the - car (dual) the - red (dual)

But on the whole, we can say that there are many examples that indicate a nasal deletion followed by a syllable, and thus it can be said, at least, that nasals, not mora nasals in this case, are apt to be unstable in this environment.

5. Borrowings and mora nasals in them in Japanese

There are many borrowings in Japanese, many of which are from English. Some of them are words which end in -iNgu originating from English gerunds *V-ing*. The words of which the base verb forms end in a mora nasal are shown in (18)⁹⁾.

- (18) a. raN => raN.niN.gu/ *raN.iN.gu "running"
 b. pu.raN => pu.raN.niN.gu/ *pu.raN.iN.gu "planning"

The derived forms in (18) seem to avoid the formation of an onsetless syllable [iN]. As a result, the mora nasals in these examples become ambisyllabic and behave as an onset of the following syllable. This shows the instability of the sequence of a mora nasal - an onsetless syllable.

Many other -iNgu-ending borrowings are produced in the following way. Most borrowings from English gerunds have their correspondings to base verbs. When an English base verb ends in a consonant, the derived word adds a default vowel, usually /u/. In word formation from English gerunds, the word final /u/ is deleted, so that the word final consonant becomes an onset followed by /i/ in -iNgu as a nucleus.

- (19) woo.ku => woo.k(u)iN.gu "walking"
 kyaN.pu => kyaN.p(u)iN.gu "camping"
 fis.shu => fis.sh(u)iN.gu "fishing"

These data also illustrate the instability of onsetless syllables. Thus, as shown in (20), onsetless syllables are not produced.

- (20) *woo.ku.iN.gu/ *kyaN.pu.iN.gu/ *fis.shu.iN.gu

This shows the same situation as in *raN.iN.gu in (18), though onsetless syllables can be allowed when they follow vowel-ending base verbs as in (21).

(21)	su.roo	=>	su.roo.iN.gu	"throwing"
	goo	=>	goo.iN.gu	"going"

It might be due to orthography that *ra.niN.gu is not derived, because a mora nasal simply alters to the following onset and whose formation seems to be a more simple process than the actual form raN.niN.gu, . The original words' spellings of "running" and "planning" in (18) have double "n"s. If an original word contains a single "n", this kind of gemination (i.e. ambisyllabic nasal) doesn't take place.

(22)	oo.puN	=>	oo.pu.niN.gu	"opening"
	ha.puN	=>	ha.pu.niN.gu	"happening"

6. Conclusion

In this paper, I analyzed mora nasals, particularly those followed by an onsetless syllable. Unlike the results in Kuwamoto (2002), Mori (2002), and Tanaka(2002), I realized the instability of mora nasals unexpectedly. Mora nasals are deleted in colloquial and rapid speech in Japanese as shown in section 3, and in Arabic morphemic word endings as shown in section 4.2. In the other cases, they cause resyllabification, and, as a result, they become an onset of the following syllable, as in Arabic prepositional phrases as in section 4.1., and in English borrowings in Japanese ending in -iNgu as in section 5. This instability of mora nasals is mainly due to the following onsetless syllable. Onsetless syllables are not generally regarded as an optimal one in the Optimality Theoretic point of view. So the instability of onsetless syllables resulting from the analysis here assists the universality of the constraint ONSET in the Optimality Theory.

Notes

* This paper is based on my talk at the 10th meeting of the Phonological Society of Japan held at Aoyama Gakuin University on June 20, 2003. I'm grateful to the participants in the meeting, the following people in particular, for many insightful questions and valuable comments and advices: Masahiko Komatsu, Haruo Kubozono, Tomoaki Takayama, and Teruo Yokotani. I'm also grateful to Ritsuko Miyamoto, John Edward Philips, and Takayuki Sugawara for useful comments on an earlier version of this paper and correcting my English phrases. Of course, all remaining errors are my responsibility.

(1) Mori (2002) shows that the proportion of avoidance of the division of CVN syllables is about a quarter of the total (5/20) which is quite high compared to other heavy syllables: CVR; 1/40,

CVQ; 0/15, CVJ; 0/1 (R=the second element of a long vowel, Q= ambisyllabic consonant, J= /w, y/
See Mori 2002: 131f.)

(2) Terao (2002: 114ff.) treats such an alternation as a kind of "a speech error," and points out that the second elements of heavy syllables cause alternation one another.

(3) The inserted vowels seems to vary only in this phenomenon, but this inserted vowels are properly (or originally) /i/ according to Wright (1967: 23).

(4) This vowel insertion takes place only after "min-" and "9an-", and not after any other prepositions.

(5) The entry words in *Gyakubiki Kojien* (a reverse dictionary of *Kojien*: Iwanami Shoten) which end in -NniNgu are only three: puraNniNgu, raNniNgu in (16), and kaNniNgu (< cunning) which is not originally a gerund at all.

References

- Itô Junko (1989) "A Prosodic Theory of Epenthesis," *Natural Language and Linguistic Theory* 7, 217-259.
- Kubozono, Haruo (1995) *Gokeisei to On'inkozo* (Word Formation and Phonological Structure), Kuroshio Shuppan.
- Kuwamoto, Yuji (1997) *Arabia-go ni Okeru Bunsetsuon-kozo to Onsetsu-kozo no Kenkyu* (A Study of Segment Structure and Syllable Structure in Arabic), Doctoral Dissertation, Tohoku University.
- Kuwamoto, Yuji (2002) "Nihon-go ni okeru Mora Teki Bion no Tokucho (Syllable Structures and Moraic Nasals in Japanese)," *Tohoku Studies in Linguistics* 11, 93-104.
- Mori, Yôko (2002) "3 Mora Fukugo-go Ryakugo no Seisei Yoin --- Wakamono Kyanpasu Kotoba kara --- (Formation of Three-mora Compound Abbreviations)," *Journal of the Phonetic Society of Japan*, Vol. 6 No. 1, 121-137.
- Tanaka, Shin'ichi (2002) "Nihon-go ni okeru Tanshukugo Keisei to Akusento (Formation of Abbreviations and Its Accentuation in Japanese)," *Proceedings of the 125th Meeting of the Linguistic Society of Japan*, 50-55.
- Terao, Yasushi (2002) *Iimachigai ha Doshite Okoru?* (Why are Speech Errors Made?), Tokyo: Iwanami Shoten.
- Wright, William (1967) *A Grammar of the Arabic Language*, Cambridge, England: Cambridge University Press.

本論文は、モーラ鼻音の、特に後続音節の構造を考慮した場合の特異性について論じた。モーラ鼻音は他の特殊拍要素に比べて高い安定度を示すとされているが、その一方で実は不安定であることを示す例が存在する。モーラ鼻音の安定性については、当該音節のみならず隣接音節の構造とも相互に関連させて考察する必要がある、ひいては音節の構造上の安定性を決定する一助となる可能性を示した。

(秋田工業高等専門学校 講師)